

FIG. 1

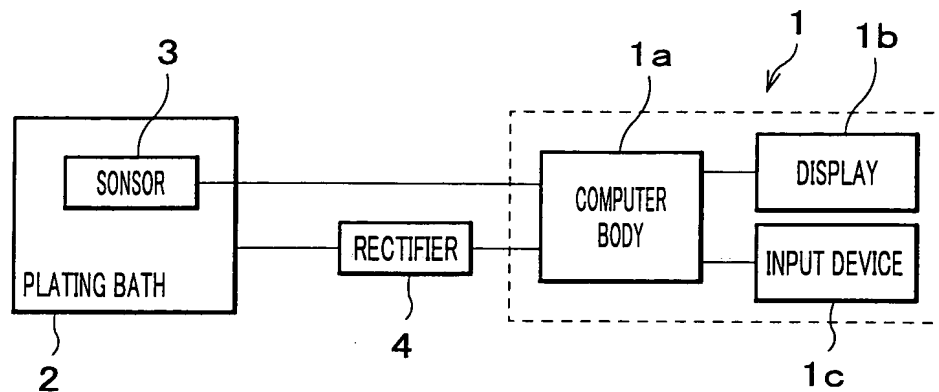


FIG. 2

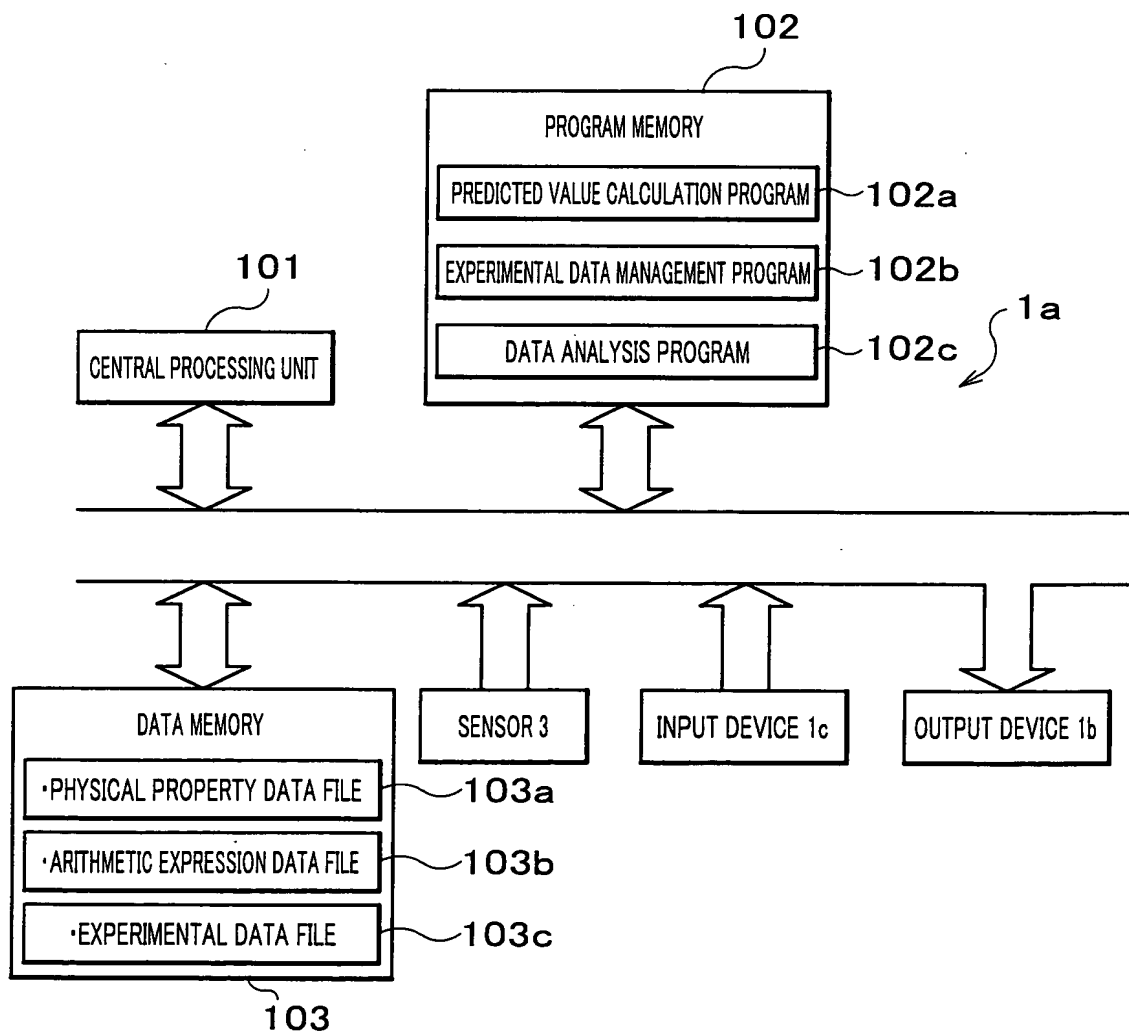


FIG.3

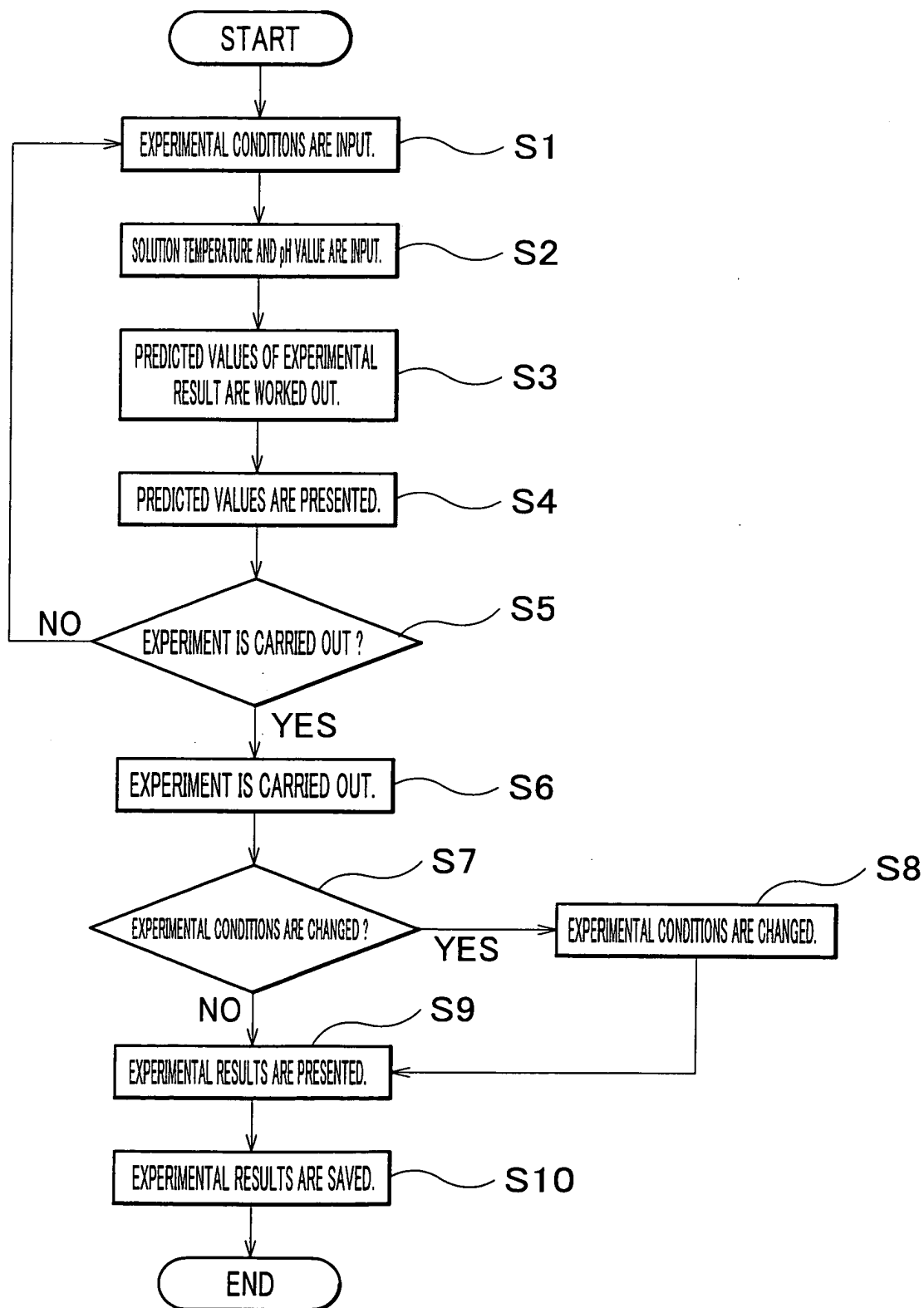


FIG. 4

5

SETTING VALUE INPUT FORM

5a ☐ NAME OF EXPERIMENT: Wafer Experiment No. 001

5c ☐ FILE NAME SAVED: WAFER-N001

5g ☐ NAME OF PLATING SOLUTION: Nickel-plated-Sulfamic Acid Solution

5j ☐ TYPE OF PLATING SOLUTION: Nickel, Ni

5h ☐ RECONFIGURATION OF PLATING SOLUTION

5b ☐ DATE: 10 November, 2000

5d ☐ NAME OF PERSON: YAMAMOTO, Wataru

5e ☐ RECORDING EXPERIMENT

5h CONDITIONS OF ITEMS TO BE PLATED

☐ NAME: Wafer Specimen

☐ MATERIAL: Si/Ti/Cu

☐ SURFACE AREA: 8.00Q mm²

☐ PRE-PLATING WEIGHT: 155.663

5u SOLUTION TEMPERATURE: 15 °C

5v pH VALUE: 5.4 ph

5f COMMENT

SHOW EXPERIMENTAL PREDICTION FORM

CANCEL

5i PLATING CONDITIONS

☐ SET TEMPERATURE: 50 °C

☐ MAXIMUM ELECTRIC CURRENT VALUE: 2.00Q A

☐ PLATING TIME: 60 s

☐ ADJUSTABLE ELECTRIC CURRENT MODE SETTING: ☒

5o 5p 5q

STAGE	ELECTRIC CURRENT (TIMES)	ELECTRIC CURRENT VALUE (A)	Δ
A	10	0.500	
B	10	1.000	
C	40	2.000	

5r

5t INTEGRATED ELECTRIC CURRENT VALUE

5s ELECTRIC CURRENT VALUE

5t PREDICTED ELECTRIC CURRENT SCHEDULE

FIG.5A

5g

Not Specified	▲
Copper Cu^{2+}	
Nickel Ni^{2+}	
Chrome Cr^{6+}	
Tin Sn^{2+}	
Gold Au^{+}	
Specified	▼

FIG.5B

5j

RECONFIGURATION OF PLATING SOLUTION	
NAME	Ni^{2+} (Nickel)
VALENCE	2
GRAM-EQUIVALENT WEIGHT	29.346
DENSITY(g/cm3)	8.85
ELECTROCHEMICAL EQUIVALENT(mg/coulomb)	0.3041

Press 'Yes' to enter the above data

Yes No

FIG.5C

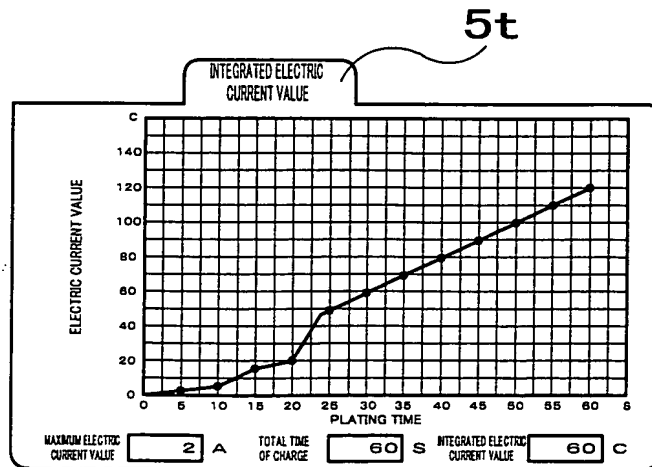


FIG. 6

6

EXPERIMENTAL PREDICTION FORM

NAME OF EXPERIMENT	Wafer Experiment No. 001	WAFER-NI001	YAMAMOTO, Watanu	10 November, 2000
NAME OF PLATING SOLUTION	Nickel-plated-Sulfamic Acid Solution			
CURRENT CONDITIONS OF PLATING SOLUTION		NAME OF ITEM		
SOLUTION TEMPERATURE		Water Specimen		
45 °C		SI/Ti/Cu		

START TEMPERATURE REGULATION

STOP TEMPERATURE REGULATION

☐ PREDICTED ELECTRIC CURRENT EFFICIENCY

UPDATE GRAPH

CATHODIC ELECTRIC CURRENT EFFICIENCY

94 %

PREDICTED AVERAGE PLATING THICKNESS

(ie cathodic electric current efficiency is 94%)

PLATING THICKNESS (μm)

PLATING TIME (S)

PREDICTED PLATING WEIGHT

(ie cathodic electric current efficiency is 94%)

PLATING WEIGHT (g)

PLATING TIME (S)

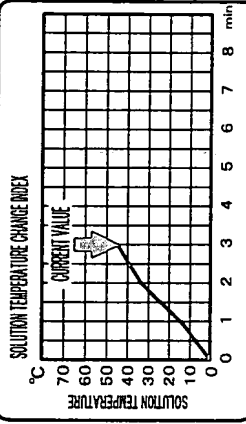
RETURN TO SETTING VALUE INPUT FORM

OK

CANCEL

6a

6b



78

75

7e.

7d.

7c.

FIG. 9

9

EXPERIMENTAL RESULT NUMERICAL VALUE FORM									
NAME OF EXPERIMENT		Wafer Experiment No. 001		WAFER-NI001		YAMAMOTO, Wataru		10 November, 2000	
NAME OF PLATING SOLUTION		Nickel-plated-Sulfamic Acid Solution		NAME OF ITEM		Wafer Specimen		MATERIAL OF ITEM Si/Ti/Cu	
PLATING TIMES	ELECTRIC CURRENT VALUE(A)	VOLUME VALUE(A)	THROUGH-HOLE CURRENT VALUE(A)	SOLUTION TEMPERATURE(°C)	pH VALUE(A)	PLATING THICKNESS(m)	PLATING WEIGHT(g)		
0	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
1	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
2	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
3	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
4	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
5	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
6	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
7	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
8	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
9	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
10	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
11	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
12	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
13	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
14	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
15	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
16	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
17	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
18	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
19	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
20	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
21	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
22	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
23	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
24	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
25	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
26	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
27	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
28	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
29	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
30	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
31	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX

SAVE IN CSV FORMAT